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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/539,802

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Martin Sohn

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ALEXANDRIA, VA 22314

EXAMINER

BROOKS, CLINTON A

ART UNIT

PAPER NUMBER

1621

NOTIFICATION DATE

DELIVERY MODE

12/17/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/539,802	Applicant(s) SOHN ET AL.	
	Examiner CLINTON BROOKS	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/25/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/18/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is **FINAL**.

Status of Claims

Claims 1-20 are currently pending. Applicants' amended claims 1 and 15.

Priority

The instant application, Application Serial No. 10/539802, filed June 20, 20005, is a filing under 35 U.S.C. 371 of International Application No. PCT/EP03/14184, filed December 13, 2003, claiming priority of German Patent Application GERMANY 102 60 082.1, filed December, 19, 2002.

Applicants' perfected priority by submitting a certified translation of DE 102 60 082 and therefore are given the priority date of December 19, 2002.

Information Disclosure Statement

All references from the IDS received July 18, 2005 have been considered.

Response to Applicants' Arguments

Because Applicants' amended claim 15, the objection to claim 15 is withdrawn.

Because WO03/045900. ("the '900 publication") was not published in English, it only applies as 102a art. Applicants have perfected foreign priority giving claims 1-20 a filing date of December 19,2002. This date is prior to the publication date of the '900 publication. Therefore in view of the priority perfection and the amendment to claim 1, the 102a rejection based on the '900 publication over claims 1-7, 10, and 13 is withdrawn.

Because the claim 1 was amended to add a new limitation, the 102/103 rejection over United States Patent No. 2822373 is withdrawn.

In view of the amendment and perfection of priority the 103a rejections are withdrawn.

New Rejections

These rejections were necessitated by amendment.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20 are rejected under 35 U.S.C. 103(a) as obvious over WO99/54289 ("the '289 publication"; published Oct. 28, 1999); United States Patent No. 6576788 is the English equivalent of this document and will be used for reference ("the '788 patent).

The '788 patent teaches a process for preparing at least one polyisocyanate comprising reacting organic amines with phosgene in an inert solvent wherein the reaction is carried out "by a two-stage reaction of the corresponding mixtures of diphenyl methanediamines and polyphenylpolymethylenepolyamines, known as PMDA, with phosgene in the presence of at least one inert organic solvent, where the corresponding carbamoyl chlorides formed in the first stage of the phosgenation and the amine hydrochlorides in the second stage of the phosgenation run through a residence time apparatus in which the amine hydrochlorides are phosgenated to the corresponding carbamoyl chlorides and the carbamoyl chlorides are dissociated into the corresponding isocyanates and hydrogen chloride...(column 1, lines 10-27)". Thus, the '788

patent teaches a process for preparing isocyanates with amines and phosgene, at least two stages, mixing apparatus, residence and apparatus.

Further, the '788 patent teaches "[i]t is known per se that the corresponding carbamoyl chlorides and amine hydrochlorides formed in the first stage of phosgenation can be run through a residence time apparatus in which the amine hydrochlorides are phosgenated to form the corresponding carbamoyl chlorides and the carbamoyl chlorides are dissociated into the corresponding isocyanates and hydrogen chloride" (column 4, lines 17 to 23).

Further, the '788 patent teaches "[i]n BE790461 and BE855235, stirred apparatuses are used as residence time reactions" (column 4, lines 27 to 29). Thus, the '788 patent teaches that mixing and residence or two stages mixing and residence can take place in a single vessel.

Further, the '788 patent teaches that "U.S. Pat. No 3,544,611 describes a distillation residence time apparatus operating at 10-50 bar and 120-150 degrees Celsius, and having an "elongated distillation zone" for dissociating the carbamoyl chloride and removing the hydrogen chloride" (column 4, lines 29 to 33). Thus, the '788 patent teaches that distillation residence time apparatuses (a reaction column) are known in the art in this art for the exact purpose recited the dissociation of a carbamoyl chloride into an isocyanate and hydrogen chloride" (column 4, lines 29 to 33).

Further, the '788 patent teaches that the combination of mixing and residence time apparatuses for preparing PMDI, in particular two-stage phosgenation, is also known (column 4, lines 44 to 45) including using nozzles. Further, the '788 patent teaches that DE3744001, a ring-eye nozzle as a reactor for reacting primary amines with phosgene is an invert solvent to give the carbamoyl chlorides and amine hydrochlorides is combined with one or more perforated plate

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columns as apparatus for phosgenating the amine hydrochlorides and dissociating the carbamoyl chlorides (column 4, lines 46 to 52).

Specifically, the '788 patent teaches a two-stage reaction of PMDA with phosgene in the presence of at least one inert organic solvent, where the first stage of the phosgenation is carried out in a static mixer and the second stage of the phosgenation is carried out in a residence time apparatus...." (column 5, lines 3 to 10).

Natural pressure drop across the system is reasonably expected.

Further, the '788 patent teaches nozzles (column 5, lines 9 to 15), PMDI (column 1, lines 1 to 20). Further, with respect to residence time the '788 patent teaches that residence time is a result dependent variable. For example, the "[i]t is also possible to use other internal column fittings which ensure the necessary residence time for the carbamoyl chloride dissociation and rapid and effective removal of hydrogen chloride" (column 5, lines 45 to 50).

The '788 patent teaches at least a tube reactor (column 4, line 24). Further, the '788 patent teaches a number of theoretical plates and two plates in the enrichment section thus at least two reactors of the same or different types are connected in series (example, column 8), removing phosgene (at least example at column 8), valve tray column (at least example at column 8), integration of mixing and residence (at least column 8, example), preferably temperatures of 90-110 degrees Celsius (at least column 5, lines 31) further temperature is a result dependent variable, aromatic hydrocarbon solvent for example chloro-benzene (column 6, lines 43 to 47), pressures of 4.3 bar a result dependent variable (for example, column 8 example).

With respect result dependent variables generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

The ‘788 patent fails to teach a specific embodiment where the specific combination of the three stages.

In *KSR International Vo. V. Teleflex Inc.*, 82 USPQ2d (U.S. 2007), the Supreme Court particularly emphasized “the need for caution in granting a patent based on a combination of elements found in the prior art,” (*Id.* At 1395) and discussed circumstances in which a patent might be determined to be obvious. Importantly, the Supreme Court reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” (*Id.* At 1395).

The '788 patent teaches a mixing apparatus, a residence apparatus, and a reaction column. Further, the '788 patent teaches that these mechanical parts were all known in the same art. Further, the ‘788 patent teaches that these parts have been used in processes involving isocyanates.

Thus, all of the elements of claims were known to one of ordinary skill in the art at the time the invention was made and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the

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time of invention. Therefore, the claimed invention, as a whole, would have been obvious to one of ordinary skill in that art at the time the invention was made.

Conclusions

No claims are allowed.

It should be noted that page 25 of the specification discloses at least, “[t]he particular advantage of the process of the present invention is that, in contrast to the processes customary in the prior art, the two reaction steps 1) phosgenation of the amine hydrochloride to form a carbamoyl chloride and 2) decomposition of the carbamoyl chloride into isocyanate and hydrogen chloride are carried out in separate reactors and very high chemical yields, very high space-time yields and at the same time a very low phosgene holdup”.

Claims drafted to reflect structural advantages over the prior art would facilitate prosecution. The Examiner recognizes that increases of yield/ space-time yield in an industrial process can possibly provide an unexpected result.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLINTON BROOKS whose telephone number is (571)270-7682. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DANIEL SULLIVAN can be reached on (571)272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Cab

/Daniel M Sullivan/

Supervisory Patent Examiner, Art Unit 1621